

[DOCUMENT NAME] ABSTRACT OF THE DISCLOSURE

[ABSTRACT]

[PROBLEM] The present invention relates to lithium secondary batteries. Organic solvents used in the electrolytic solution are usually volatile and inflammable, hence have problem in safety. Contrary to organic solvent, salts melting at room temperature have characteristics of being nonvolatile and flame-retardant and have been expected to be applicable to electrolytic solutions for lithium secondary cells. However, aliphatic salts melting at room temperature are all compounds having high viscosity, failing to afford electrolytic solutions which are fully satisfactory in electric conductivity even if the salts are used as admixed with an organic solvent of low viscosity. The use of the salts gives cells increased internal resistance especially over a low temperature range. If a large amount of organic solvent is added to reduce viscosity, then electrolytic solution has high inflammability, lowering flame-retardant effect by containing room temperature molten salt.

[SOLVING MEANS] The present invention relates to a nonaqueous electrolytic lithium secondary cell which is excellent in safety, has improved electric conductivity at a low temperature range, and stabilized charge-discharge characteristics, the cell containing a room temperature molten salt, i.e., a combination of an aliphatic quaternary ammonium salt of the formula (1) and a fluorine-containing anion, a specific organic solvent, a specific lithium salt, positive electrode, negative electrode and separator.

[SELECTED DRAWING] FIG.1